Space Weather Forecast

Issued on Friday, 02 February 2024 at 13:08 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

---

Space Weather Forecast Headline: Chance of isolated Moderate-class flares. Coronal Mass Ejection glancing blow possible late Day 2 or early Day 3 (03-04 Feb), with a chance of Minor geomagnetic storms.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Solar activity has been Moderate, with a Moderate-class flare at 02/0301 UTC from a region near the southeast limb. This is difficult to analyse near the limb and appears simple, but this could be due to foreshortening effects in its current position. There are now eight sunspot regions on the disc. A region in the northeast has been fading in area and complexity over recent hours. Another region near north centre disc still shows moderate magnetic complexity, but is also fading somewhat. The other regions appear mostly fairly small and simple at present.
Further analysis has been done on the Coronal Mass Ejection (CME) produced at 01/0743 UTC, with this now considered most likely to only give a glancing blow at Earth, probably early on 04 Feb. Several other CMEs have been seen in coronagraph imagery, but none are considered likely to be Earth directed.

Solar Wind / Geomagnetic Activity: Solar winds were mostly at background levels, with CME effects having waned. Wind speeds declined from slightly elevated to background levels, from around 420 km/s to near 350 km/s. The interplanetary magnetic field was weak, with the north-south component varying weakly. Geomagnetic activity was Quiet (Kp 0-2).

Energetic Particles / Solar Radiation: High energy proton flux is slightly elevated above normal background levels, but is well below the S1/Minor Radiation Storm threshold.

Four-Day Space Weather Forecast Summary
Solar Activity: Overall activity is most likely to be Low, but with an increasing chance of further isolated Moderate-class flares.

Solar Wind / Geomagnetic Activity: A CME which left the Sun at 01/0743 UTC has been re-analysed. This analysis suggests the possibility of a glancing blow either later on Day 2 (03 Feb) or more likely early on Day 3 (04 Feb). In addition there may be also be a coronal hole fast wind enhancement during this period. The majority of the fast wind arrival is expected to be on Day 3 or Day 4 (04-05 Feb), with solar wind speeds perhaps reaching 450-500 km/s.
Geomagnetic activity is expected to remain Quiet to Unsettled (Kp 0-3) today. From later tomorrow, the potential for glancing CME effects means that there is a chance of Active to G1/Minor Storm intervals, perhaps with a slight chance of G2/Moderate Storm intervals should any CME and fast wind effects combine. Activity should then decline through Day 4.

Energetic Particles / Solar Radiation: High energy proton flux is expected to remain below the S1/Minor Radiation Storm level, with a very slight chance of exceeding the S1 threshold during the period.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2024. All Rights Reserved.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	20	40	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	35	40	40	40
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2024. All Rights Reserved.